DEATH OF MR. ALEXANDER MACMILLAN.

WE much regret to record the death of Mr. Alexander Macmillan, one of the founders of this journal. This is not the place to give a long account of his career. We may limit ourselves to the statement that outside the field of scientific workers there were few who possessed a greater sympathy with scientific aims, few who had a keener insight as to the place science should occupy in our national life and in our educational systems. It was the hope that a more favourable condition for the progress of science might be thereby secured that led him to enter warmly into the establishment of this journal in 1869. Mr. Macmillan was born in 1818, and died on Saturday last, at his residence in Portland Place.

NOTES.

M. MAURICE LŒWY, the distinguished French astronomer, has been elected a corresponding member of the Berlin Academy of Sciences.

ELON COLLEGE, of North Carolina, has received an endowment of 100,000 dollars from a resident of New York City. The faculty will not reveal his name.

MME. W. HUBER has presented a sum of 20,000 francs to the Paris Geographical Society, in remembrance of her husband. The Society has made the donor a life member, and has devoted the money to establish, under the name "Prix William Huber," a silver medal to be awarded annually to the author of the best work on the structure of mountains and valleys, or on glaciers and mountain lakes.

ACCORDING to the New York *Nation*, Portugal is about to follow the example of some greater Powers, and celebrate a quater-centenary of its own. At the request of the Geographical Society of Lisbon, the Government has just determined to celebrate, with much pomp, in 1897, the four-hundredth anniversary of the expedition which, on July 8, 1497, set out, under the command of Vasco da Gama, for the discovery of the route to India round the Cape of Good Hope. Few details of the celebration have as yet been settled upon, but it is expected that special expositions will be opened at Lisbon, and many scientific congresses held, to which the world will be invited.

WE have already referred to some of the honours given in commemoration of the centenary of the French Institute. How freely France distributes her decorations to men of science will be seen from the following list, given in the *Revue Générale des Sciences*, of the recent nominations to, and promotions in, the Order of the Legion of Honour. Grand Officer : M. J. Bertrand, Secrétaire Perpétuel of the Academy of Sciences. Commanders : MM. C. J. Bouchard, P. E. Duclaux, M. Lœwy, E. J. Marey, Members of the Academy of Sciences. Officers : MM. P. Appell, A. d'Arsonval, F. A. Fouqué, A. Gautier, E. Grimaux, H. Léauté, H. Moissan, E. Perrier, Members of the Academy of Sciences, and MM. A. Houzeau, R. Lépine, F. Raoult and E. Stephan, Correspondants of the same Academy. Chevaliers : MM. R. Blondlot, l'abbé A. David and G. E. Sire, Correspondants of the Academy of Sciences ; and MM. Chappuis and Guillaume, of the Bureau international des Poids et Mesures.

WE have on several occasions called attention to the blunders which are made, and the disputes in which the country is involved from time to time, because of the unintelligent way in which the work of various Government departments is carried on. Each branch of the public service, instead of being advised by a scientific staff, is controlled by an officialdom which believes in its own omniscience ; a condition of things as deplorable as it is derogatory to national honour and advancement. As we have before pointed out, administrators of departments in which questions involving scientific knowledge continuously arise are, to put the point mildly, *not* chosen on account of their scientific qualifications, and they have to pick up their information as best they can, the result being that they arrive at unsound decisions, and create dissatisfaction everywhere. The *Engineer* of January 17 has something to say which strongly supports our complaint of the neglect of scientific knowledge in the public service. Referring to Admiralty contracts, our contemporary says: "The duty of the Admiralty is to obtain the best possible ships, engines, guns, &c., that can be had ; and that those who have to consider the tenders ought to know when a tender is too high or too low. In a word, they ought to know the value of what they propose to buy. Whether the knowledge does or does not exist in the Controller's department, we are unable to say ; apparently it does not. The actual method of obtaining ships is strictly analogous to that adopted by a man who, totally ignorant of what a dwelling-house ought to cost, first gets drawings from an architect, and then advertises for tenders. Having obtained them, he proceeds to pit the tenderers against each other, assuming that in this way he will get the best value for his money. The mere mention of this method of doing business will be enough to condemn it in the eyes of our readers. But there is ample evidence available that the Whitehall people do not know what is the proper price to pay for work or materials, and to this ignorance on the one hand, and on the other to a fear of being cheated based on that ignorance, is no doubt due the bargaining and bartering which, during the last few years, have gone on at Whitehall, and have at last become so vexatious that it is matter of common talk among those firms who have laid themselves out to execute Admiralty orders." It is clear that if the relations between the Admiralty and the shipbuilding and engineering firms of the country are to be of a cordial description, the present system of conducting business will have to be greatly altered, and the sooner the alteration comes the better it will be for the country's welfare.

MR. F. E. WILLEY, of the Royal Gardens, Kew, has been appointed Curator of the newly-founded Botanic Station at Sierra Leone. Mr. J. M. Henry has retired from the post of Superintendent of the Baroda State Gardens. He was sent out from Kew in 1867, and after twelve years' service in Madras and Bengal was appointed to Baroda in November 1879.

DR. JOHN S. BILLINGS, Director of the Department of Hygiene in the Pennsylvania University, has been elected librarian of the new consolidated libraries of New York, representing the Lennox library, the Astor library, and the Tilden bequest. Dr. Billing's Index Medicus, and the Index Catalogue of the Surgeon-General's Library at Washington, furnish stupendous evidence of his capacity for cataloguing, and, with his experience in other directions, make him eminently fitted for the responsible post he has taken.

MR. A. G. CHARLETON presided on Friday, the 24th inst., at the Criterion Restaurant, over the twenty-third annual dinner of the old students of the Royal School of Mines. About a hundred and twenty guests were present, amongst these being the professors at the School and several distinguished visitors. In proposing the toast of "The Mining and Metallurgical Industries," the Chairman commented upon the relation of peace and monetary matters, and showed how the School of Mines was of the highest importance in training men to open up gold and other mining centres. Profs. Roberts-Austen and Le Neve Foster replied for metallurgy and mining, respectively. The toast of "The Professors" was proposed by Prof. Page, and replied to by Prof. Judd. Mr. G. T. Holloway proposed "The Learned Societies," and Prof. Tilden responded. "The Health of the Old Students" was dealt with by Mr. B. H. Brough and Mr. S. H. Cox. The question of the formation of a register of the old students was referred to by several of the speakers, and a guarantee fund for its publication was raised.

A NOTE received from Mr. John Plummer, Sydney, New South Wales, calls attention to the way in which science is represented in the colony. The Royal Society of New South Wales originated in 1821 as the Philosophical Society of Australasia, the present name being adopted, by Royal sanction, in 1856. The Linnean Society of New South Wales was established mainly by the efforts of the late Sir William Macleay, a devoted naturalist, in 1875, and has numbered among its members many of the leading scientific men in Australasia. The Royal Geographical Association, established in 1883, has branches in Victoria, South Australia, and Queensland. The headquarters of the Australasian Association for the Advancement of Science, based on the lines of the British Association, are in Sydney. The meetings of the Association are held alternately in the various colonies. Among other scientific associations in Sydney are the New South Wales Zoological Society, branches of the British Astronomical and British Medical Associations, Australian Economical Association, Pharmaceutical Society, Engineering Association, Insurance Institute, Institute of Architects, Institute of Bankers, Electric Club, Institute of Surveyors, &c.; not a bad record for a country which has but recently completed the first century of its existence, and is yet practically in its infancy as a nation.

A HYGIENIC EXHIBITION will be held at Warsaw during the present year. The *Journal* of the Society of Arts says that there are nine Committees at work, to whom have been assigned the following subjects: (1) Air, water, light; food in general, and articles connected with the above; also kitchen utensils, paints, wall-paper, and poisonous vegetables. (2) The question of sterilisation; also the utensils used for the culture of bacilli, showing exhaustively the method of ascertaining their presence and the means for their destruction. (3) Human dwellings in general, past and present, and the latest improvement in hygienic building. (4) The hygienic mode of caring for children; construction of school-houses, all systems of school education, and school-rooms and furniture. (5) The hygiene of industry; the hygienic conditions prevailing in the homes of labourers, shops, and factories; also food, and drink, and vital statistics. (6) The history and statistics of hygiene and the modern hospitals of the world. (7) The literature and history of pharmacy, patent medicines, furniture, and medical instruments, and all pharmaceutical utensils. (8) Statistical plans, diagrams, drawings, and all printed matter on the subject of hygiene, meteorology, geology, hydrography, and anthropology, in all their detail, and all sciences connected therewith. (9) The manner of living, dwellings, &c., of all classes of the population from a sanitary point of view. Awards of gold, silver, and bronze medals will be made, and also diplomas and letters of honour.

THE French Meteorological Office has recently issued its *Annales* for the year 1893, consisting of three parts: (1) memoirs, containing discussions on thunderstorms, distribution of hail, terrestrial magnetism, &c.; (2) observations made at stations in France and its colonies; and (3) a very detailed account of the distribution of rainfall. From the introductory text we see that weather forecasts are regularly issued to seaports and to agriculturists, and also warnings of storms. In both of these departments a large amount of success has been achieved, part of which is attributed to the regular receipt of telegrams from the Azores and from America, a comparison of these data allowing a more accurate idea to be formed of the changes which approach from the Atlantic Ocean. Observations are regularly collected from ships, and the observers, both on land and at sea, are encouraged in their work by the presentation of medals to those who have kept the best registers. Comparative observations are made at the Central Office and on the Eiffel Tower; the next year will complete a series of five years' observations, when a discussion of the more important results obtained will be undertaken, with especial reference to the influence of altitude on the various meteorological elements.

A SIMPLE instrument for recording the time of occurrence of an earthquake is described by Prof. C. F. Marvin in the *U.S. Monthly Weather Review*. A heavy lead weight is suspended on a short steel link, to which it is pivoted by means of a sharp-pointed screw, the point being just above the centre of gravity of the weight. A similar pointed support is provided for the top of the link, which hangs from a small projection in the frame of the instrument. The link is prolonged upwards as a needle about 6 inches long, the top of which passes through a small hole in a plate connected with the frame. The plate is electrically insulated from the rest of the instrument. A movement of the ground is magnified by the end of the needle, and the contact of the needle with the sides of the hole in the plate can, by connection with suitable electrical apparatus, be made to stop a clock or produce an automatic record on a sheet of paper. The instrument is a modification of one devised by Prof. Marvin in 1885, and has been in operation at the U.S. Weather Bureau since the winter of 1892-93. The recording apparatus used with it is the so-called "weekly anemometer register," and the time of a disturbance can be read to less than half a minute. It will be seen from this brief description that Prof. Marvin's seismoscope is almost identical with that used to start the revolving plate in Prof. Ewing's well-known seismograph.

THE first number of *The Scalpel* contains an article, by Mr. Lennox-Browne, on the new serum treatment of diphtheria, in which the writer comments upon the statistics derived from its application here and on the continent respectively, and attempts to explain the great discrepancy which so far exists between British and foreign results. Without entering into all the details of the controversy, there is one point which may be of some significance in the discussion; and this is the complaint made to the Clinical Society, that with the English serum supplied, no indication was given of the varying strength with which it was endowed. It may be of interest to know that in Germany the antitoxic serum is subject to State control as regards its preparation, the estimation of its activity, and its sterility, and that each phial which is issued, bears as a guarantee the official control number, as well as the date of the official test of the serum. The fact that in England such striking results have not so far been obtained as on the continent and in America, cannot alter the fact that we have undoubtedly in the serum-treatment of diphtheria a new departure in therapeutics, the far-reaching importance of which can hardly be exaggerated, and certainly not denied.

THE number of icebergs met between the Cape of Good Hope and Australia are vastly greater in some years than in others. Within the past few years, for instance, an extraordinary accession of enormous icebergs has occurred. As an explanation of this, it has been suggested that unusual falls of snow may account for it by accelerating the motion of the ice; but Mr. H. C. Russell, F.R.S., remarks, in a paper read before the Royal Society of New South Wales in September last, that the circumstances forbid the acceptance of this view, because the motion of the glacier depends mainly on the declivity down which it is descending, and that does not alter, and the piling up of snow could not in one year cause such a marked increase in the rate of flow as would be necessary to account for the enormous increase in number of icebergs which appear from time to time. There must evidently be a force sufficient to break off the icebergs which are slowly forming on shore, and to do it at irregular periods separated by many years. He is of the opinion that the true cause resides in the volcanoes of the Antarctic continent, when they burst forth in eruption, and by the act so shake the foreshores, that the icebergs are broken off from the glaciers. In connection with Mr. Russell's paper, it is interesting to note a report, issued from the U.S. Hydrographic Office, descriptive of the floating ice seen during 1892 and 1893 in the South Atlantic east of Cape Horn. It is said that the icebergs were of such size that they could not have been formed on small, low-lying islands, but only on a large continent of such height that great glaciers could be formed.

Is there a connection between crime and the weather? The relations between certain meteorological conditions and many diseases has been fairly well established, and more knowledge about the connection is likely to be obtained now that a department having for its object the collection of statistics referring to climate and health has been formed in the U.S. Weather Bureau. And if bodily disease is affected by atmospheric changes, why not those mental diseases which result in the perpetration of crimes? Several attempts have been made to reveal a connection between the moods and impulses of the people and the weather, and a description of the results obtained in the latest of these investigations is contained in the current number of the *American Meteorological Journal*. The investigator is Mr. C. E. Linney, Director of the Illinois State Weather Service, who has considered the police records of the city of Chicago for each month in the years 1888–1894, the total number of arrests for each month, and for each division of crime, being examined with his "weather eye" open. While it is admitted that there are some cases which seem to go against the general rule, Mr. Linney thinks that the results do show a marked increase in crime with the increase in temperature, probably daily, at least for the months, seasons, and the year. Also that there is an increase in crime with a marked deficiency in rainfall, temperature conditions remaining normal; and again a greater increase where both conditions are aggravating causes. As for humidity, there seems to be no special connection, and also little connection with the cloudiness, except possibly a slight increase in clear, and a slight decrease in cloudy, weather. On the other hand, it is thought that the figures show a decrease in crime with a deficiency in temperature, especially during winter months, or with excess in rainfall in summer, and a greater decrease when both are restraining causes. Mr. Linney also thinks his results indicate that there is a decrease in crime with a north-east over a south-west wind. Perhaps the day will come when police stations will possess a full equipment of meteorological instruments, by reference to the readings of which police inspectors will regulate their vigilance.

NOS. 5 and 6 of the "Records of the Botanical Survey of India" are devoted to a report on a botanical tour in the Lakhimpur District, Assam, by Mr. G. A. Gammie; and notes on a journey from Poona to Nagotna, by Mr. G. M. Woodrow.

WE have received a copy of the memoir of the late Mr. Frederic Kitton, the well-known diatomist. His life affords one of the numerous instances of the great additions to our scientific knowledge due to men immersed in business, who can only devote to science their hard-earned leisure.

A CATALOGUE just received from the General Electric Company shows to what a vast extent the electrical industry has grown. The catalogue, which runs into nearly one thousand quarto pages, appears to include illustrations and descriptions of almost every invention known in connection with the application of electricity to useful purposes, and an abundance of information of value to electricians, while students will obtain from it a good idea of modern electrical work.

NOS. 4 AND 5 (vol. iii.) of the "Contributions from the United States National Herbarium," issued by the Department of Agriculture, have reached us. The former is devoted to a report, by Mr. J. M. Holzinger, on a collection of plants made by Mr. J. H. Sandberg and assistants in Northern Idaho in the year 1892. The latter contains a report, by Prof. J. M. Coulter and Mr. J. N. Rose, on Mexican Umbelliferæ, mostly from the State of Oaxaca, collected by Mr. C. C. Pringle and Mr. E. W. Nelson; and descriptions of plants, mostly new, from Mexico and the United States, by Mr. J. N. Rose.

MR. ARTHUR LISTER, the monographist of the Mycetozoa, who recently presented to the British Museum a magnificent collection of these organisms, together with a number of microscopic slides, has now prepared a "Guide to the British Mycetozoa," founded on these collections, which can be obtained in the Botanical Gallery of the Museum. It contains a most valuable, though concise, account of the life-history of these interesting structures, and a synopsis of the British genera and species. Each genus is illustrated by at least one woodblock drawn by the pencil of Miss Galielma Lister.

A "Review of Mineral Production in India" for 1894, compiled by Mr. G. Watt, has been published by the Indian Government. It is carefully prepared, and as regards the important materials salt, coal, and petroleum, the statistical returns of production, import and export, are complete. Iron ore is also fully treated; but it was not found possible to give complete statements of other minerals, though a great deal o information, both statistical and descriptive, has been brought together. In view of the great difficulties in the way of obtaining full information, the result is very satisfactory, and will probably lead to greatly improved reports in the future.

WITH the January number, the *National Geographic Magazine*, published by the National Geographic Society, Washington, commences a new series, and makes its first appearance as a monthly publication. It is intended that the magazine shall be the exponent of the geography—physical, political, and commercial—of the New World; in fact, the aim is to be American rather than cosmopolitan. The articles in the first number are "Russia in Europe," by the Hon. Gardiner G. Hubbard; "The Arctic Cruise of the U.S. Revenue Cutter *Bear*" (with illustrations), by Dr. Sheldon Jackson; and "The Scope and Value of Arctic Exploration," by General A. W. Greely.

THE eleventh volume of "Travaux et Mémoires" of the International Committee of Weights and Measures, has just come to us from MM. Gauthier-Villars, together with a volume containing the "Procés-verbaux" of the meetings of the Committee in 1894. Under the title, "Determination expérimentale de la valeur du mètre en longueurs d'ondes lumineuses," the former contains a detailed account of Prof. Michelson's work in connection with the use of the light-wave as the ultimate standard of length. There are two other papers in the volume, viz. "Mètres prototypes et étalons," by M. J. René Benoît and

M. C. E. Guillaume, and "Nouvelles déterminations des mètres étalons du Bureau international," by the same authors.

We have received the 22nd and 23rd Annual Reports of the Geological and Natural History Survey of Minnesota (for 1893 and 1894). Among the contents of the latter are a criticism on the late Dr. G. H. Williams's explanation of the Archæan greenstones, by N. H. Winchell; a preliminary report on the gold region of Rainy Lake, by H. V. Winchell and U. S. Grant; an historical sketch of Lake Superior mining, by H. V. Winchell; and a study of the late Glacial earth-movements of the St. Lawrence basin, by Warren Upham. Geologists will be interested to know of the issue of an official "List of Publications" of the Geological Survey of Canada (Ottawa: 1895), which includes all reports, with their separate contents, maps, and certain papers on Canadian geology, reprinted from various publications.

The ninth annual report of the Liverpool Marine Biology Committee contains an account of much useful work done at the Port Erin Station during the past year. (1) In his consideration of the submarine deposits of the Irish Sea, Prof. Herdman suggests the recognition of a neritic group of deposits in addition to the pelagic and terrigenous deposits defined by Murray. The neritic deposits are largely organic in origin, formed from the remains of plants and animals living on the bottom, and so differ on the one hand from the terrigenous deposits derived from the waste of land, and on the other from the deep-sea varieties due chiefly to the accumulation of the remains of pelagic organisms. (2) So far as experiments with drift-bottles have been able to show, the prevailing currents on the west of the Isle of Man seem to be towards the Irish coast, and on the east towards the Lancashire, Cheshire, and Cumberland coasts; these observations are interesting on account of the existence of flat-fish spawning grounds in the neighbourhood of the Manx coast. (3) The report also furnishes additional evidence in favour of the Darwinian view that closely-related species are not, as a rule, found together. In addition to the investigations on these general problems, the report includes various contributions in regard to the local fauna.

The 1896 edition of that very comprehensive volume, the "Annuaire du Bureau des Longitudes," has now been issued. To say that no year-book is of greater service to astronomers and physicists than this "Annuaire," is but to record the opinion of all workers in the domain of physical science. The present edition has been brought thoroughly into line with recent knowledge. M. Lœwy has added a brief note on the proper motion of the sun, and the apex of the sun's way. M. Cornu contributes two new notes—one on the bright lines in the spectrum of the chromosphere recently identified with those of terrestrial substances, and the other on the identification of lines in stellar spectra. The list of minor planets has been brought up to 416; and some changes have been made in the list of double-star orbits. M. Moureaux gives the values of the magnetic elements determined at 644 points in France; and M. Cornu contributes new chapters on specific heats, and on the latent heats of fusion and vaporisation of water. Among the articles, we notice one on action at a distance and waves, and another on Fresnel's works, both by M. Cornu; and there is also an article on the proposed magnetic survey of the earth, by Captain de Bernardières; and an account, by M. Janssen, of his third ascent to the observatory on the top of Mont Blanc.

Messrs. Dulau and Co. have made arrangements to publish a work on "The Coccidæ of Ceylon," by Mr. E. E. Green. All the species at present recognised in Ceylon, including several new genera and numerous new species, will be described, and illustrated by 120 coloured plates. The work will be published in four parts, for which Messrs. Dulau are now inviting subscriptions. In the prospectus announcing the proposed publication is an inset, in which the opinion of members of the B.A. committee on the Coccidæ of Ceylon is set forth. It is there pointed out that what is known of the distribution of this cosmopolitan group justifies the belief that many of the new species from Ceylon described by Mr. Green will prove, as inquiry advances, to be world-wide. The Committee therefore recommend the work to the consideration of subscribers, believing that it "will be of great assistance to gardeners and to naturalists generally, and of considerable value to those engaged in economic entomology or in the management of plantations in any part of the world, as well as to systematic entomologists and morphologists."

Several new editions of scientific works have lately been received. Messrs. E. and F. N. Spon have published the third edition of Prof. J. H. Cotterill's classic volume on "The Steam Engine considered as a Thermodynamic Machine." A few slight changes and additions have been made in the appendix, but the book has been practically reprinted without substantial alteration. The eleventh edition of "Discoveries and Inventions of the Nineteenth Century," by Mr. Robert Routledge, has been published by Messrs. G. Routledge and Sons. The text has been emended. and the volume has been enlarged by a few pages of notes, and by new sections dealing with some of the engineering achievements and scientific discoveries of the last five years. The final part (vol. iii. part iv.) of the tenth edition of "Quain's Elements of Anatomy" (Longmans, Green, and Co.), edited by Profs. Schäfer and Thane, has now appeared. Its subject is Splanchnology; the anatomical descriptions belonging to which have been revised, and in many cases rewritten, by Dr. J. Symington, while the histological portion has been re-edited by Prof. Schäfer. It is proposed to issue a chapter on superficial anatomy, in the form of an appendix to the work. The fourth edition has been issued of Mr. W. T. Lynn's slender book on "Remarkable Comets." From the useful list of the dates of the returns of interesting comets, we see that, in the spring of this year, Faye's comet (period 7½ years) is due, and in the spring or summer, Brook's comet (period 7 years). All the information in the book has been carefully brought up to date.

The additions to the Zoological Society's Gardens during the past week include a Black-faced Kangaroo (*Macropus melanops*, ♀) from Australia, presented by Mr. E. Mitchell; a Himalayan Bear (*Ursus tibetanus*, ♀) from Upper Burmah, presented by Captain Gale; a Slow Loris (*Nycticebus tardigradus*) from Upper Burmah, presented by Captain J. W. Carrothers; a Salt-water Terrapin (*Clemmys terrapin*) from the West Indies, presented by Mr. J. Lea Smith; Seven Galliot's Lizards (*Lacerta galloti*), a Delalande's Gecko (*Tarentola delalandii*) from Madeira and Tenerife, presented by Mr. H. B. Hewetson, two Indian Jerboas (*Alactaga indica*) from Baluchistan, purchased.

OUR ASTRONOMICAL COLUMN.

The Double Star 70 Ophiuchi.—Of the numerous orbits which have been computed for this well-known double star, that derived by Dr. Schur in 1893 is perhaps entitled to greatest confidence. Nevertheless, even in the short interval which has since elapsed, Dr. See finds that the companion is several degrees in advance of the theoretical position based on Schur's orbit. In explanation of this, as well as of other departures from the orbit which appear on close investigation, Dr. See suggests that the companion is attended by a dark satellite, moving in a retrograde direction with a period of about thirty-six years, the period of the visible pair being a little less than ninety years. The distance of the companion from the centre of gravity of itself and satellite is probably about $0''\cdot3$; and a circular orbit with node and inclination identical with the similar elements of the visible pair sufficiently explains the observed changes of position angle and distance. Adopting the parallax $0''\cdot2$, the